NEW AND EXOTIC WEEDS OF MONTANA

RECENT INTRODUCTIONS

DECEMBER 1980

New and Exotic Weeds of Montana

I: Recent Introductions [1]

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Bozeman, MT 59717

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This report briefly describes, locates and estimates rates of spread of weed plants that heretofore were unknown to the State of Montana. Essentially, these are plants, introduced from other regions or continents, which have been discovered in Montana within the last decade (1971-1980). Knowledge of the occurrence of these plants in Montana was derived from our own extensive field-work in the western half of the state and by analysis of weed specimens in six regional herbaria. Additionally, we have collected distribution and migration rate data on another 250 species of Montana's known alien weeds, approximately 100 of which may still be spreading in the northwestern United States. These data, along with (1) a method for predicting which newly introduced weeds are the most probable to become serious economic problems, and (2) a computer model of weed migrations into and through Montana (and surrounding states) may be found in another report, New and Exotic Weeds of Montana, II: Migration and Distribution of 100 Alien Weeds in Northwestern U.S.A., 1881-1980.

Survey Methods

Field Work: Intensive fieldwork began on 6 August 1980. Because of this unavoidable late start in the growing season for initiation of field investigations, coupled with the pronounced drought in eastern Montana, we decided after preliminary surveys in central Montana counties that field-work in eastern Montana would be unproductive. That is, the characteristics required for the correct identification of unknown exotic weeds would be obliterated by the lateness of the growing season and drought conditions. Thus, in the limited time available to us, we concentrated our efforts in the following counties:

Beaverhead	Jefferson	Musselshell	Teton
Broadwater	Judith Basin	Park	Toole
Carbon	Lake	Pondera	Wheatland
Cascade	Lewis & Clark	Powell	Yellowstone
Deer Lodge	Liberty	Ravalli	
Flathead	Lincoln	Sanders	
Gallatin	Madison	Silver Bow	
Granite	Meagher	Stillwater	
Hill	Missoula	Sweetgrass	

Within each of these counties, we sampled as many roadsides, railroad enbankments, water ways, grainfields, hayfields, pastures, range sites and forest sites as time permitted. At each sampling location we recorded the presence and abundance (an ocular estimate of coverage) of all vascular plant species within a 5 x 50 m plot. Unknown plants, or plants of interest were collected, pressed and dried for later identification. In total, approximately 400 sites were sampled in this manner. Additionally, as we travelled from site to site we kept a constant vigil for spotting new and interesting weeds.

Herbaria Survey: We constructed a list of 250 alien weeds that were known to currently exist in Montana or in surrounding states and Canadian provinces. Several recently published floras were consulted in this task. With this list in hand we recorded the first date of collection by county from thousands of herbarium specimens for all sto species collected from the states of Idaho, Montana, North Dakota, Oregon, South Dakota, Washington and Wyoming, and the provinces of Alberta, British Columbia and Saskatchawan that were deposited in the following herbaria: Idaho State Univ., Univ. of Idaho, Montana State Univ., Univ. of Montana, Washington State Univ., and Univ. of Wyoming. This data provides a means to analyze and calculate the rate of infestation of these introduced weeds.

RESULTS

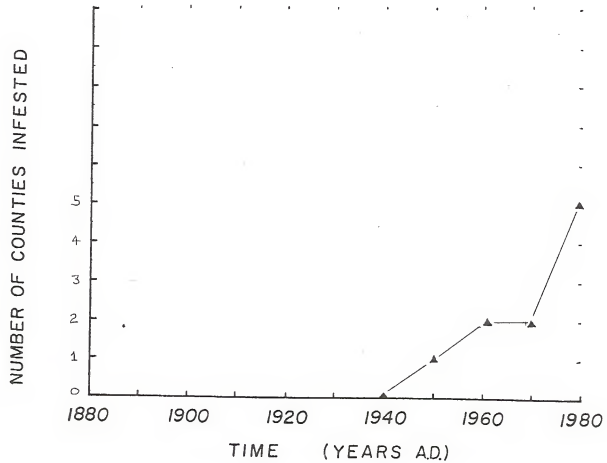
In this report we provide information on distribution and rate of spread of 19 weeds not previously known for Montana (i.e. prior to 1968), with the execption of one thistle (Onopordum acanthium, Scotch thistle) whose first introduction into Montana did not lead to an infestation, but its second introduction in the 1970's did.

Although these 19 species have definitely been considered weeds in one region or another in North America, most of them will probably not become significant weeds in Montana in the near future. However, for the moment, one can only guess at whether one weed or another will become economically significant. In an effort to resolve this inadequacy we propose here, and will attempt to document in our next report, that weeds whose rates of spread are exponential (rather than linear) will become the noxious weeds of the immediate future. We base this contention on the fact that older well-established noxious weeds like cheatgrass (Bromus tectorum) and kochia (Kochia scoparia) all increased to their current levels of infestation at an exponential rate, while insiginficant weeds increase their ranges at a more linear (slower) rate.

Thus following the brief description of each species reported here we have provided a graphic example of the plant's rate of spread, and a series of ten maps pictoralizing the geographic migration of the weed. From these graphs and maps we have proferred opinions on the potential status of each of these newly introduced plants as a noxious weed of the future.

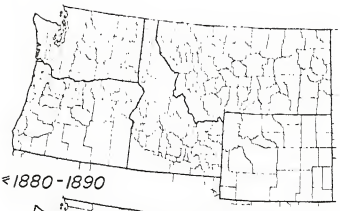
Carduus acanthoides L. Plumeless thistle (Asteraceae; Compositae; Sunflower Family)

Plumeless thistle is a particularly spiny thistle that resembles Canada thistle superficially. It is technically separated from the latter by several characters, but it can be distinguished from Canada thistle at a distance by its taller (1.5-2.0 meters) and more spindly appearance. Plumeless thistle is an European introduction that is now widespread in the United States. The plant has been known in the NW states since 1941. It entered Montana in the 1970's, its first collection being in 1977. It occurs only in Flathead County so far as is known. The weed's distribution is apparently rather restricted in Flathead Co., though it is a serious pest where it does occur - particularly in pastures. Plumeless thistle is especially abundant a few miles west of Kalispell along Route 2. Our field reconnaissance suggests that its distribution is confined to a triangular area whose apices are Kalispell, Marion (just off Rt. 2) and Lakeside (on Rt. 93). As suggested in the figure below, plumeless thistle is spreading rapidly and is almost certain to become a serious weed if not controlled immediately.



Spread of weed in the Pacific Northwest (Idaho, Montana, Oregon, Washington and Wyoming) by counties. Distributions determined from an analysis of regional herbaria specimens and fieldwork in 1980.

PLUMELESS THISTLE



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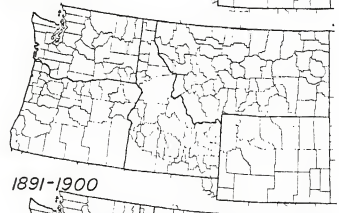

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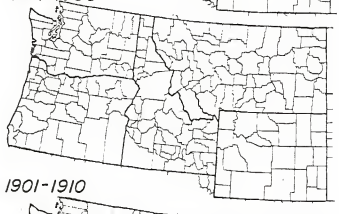
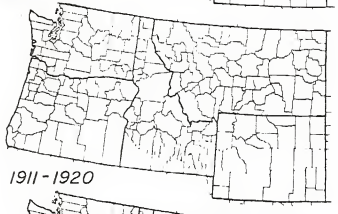
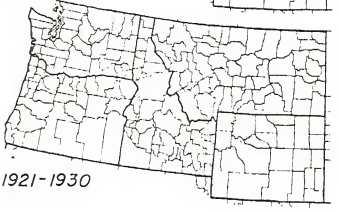


1901-1910



1911-1920



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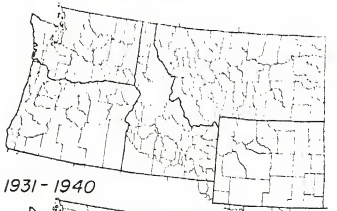

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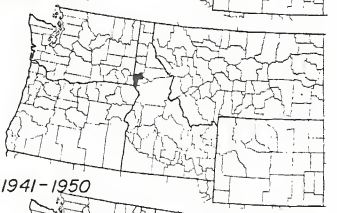

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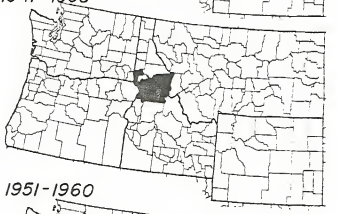

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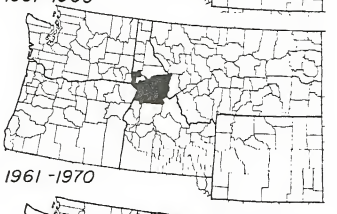

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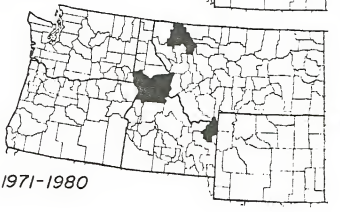
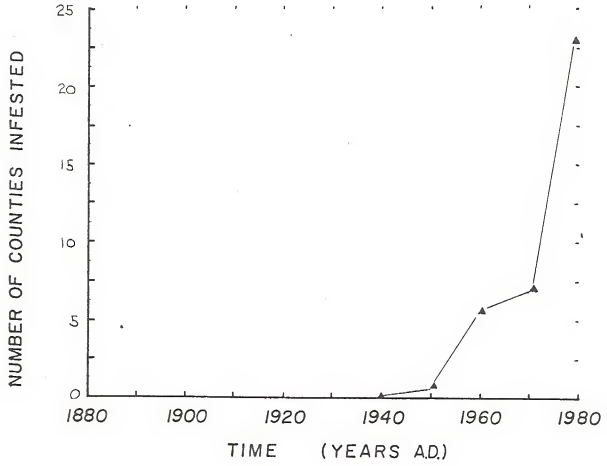


1971-1980

Onopordum acanthium L. Scotch thistle (Asteraceae; Compositae; Sunflower Family)

Scotch thistle is a robust, (2 meters tall) thistle with large, more-or-less undissected, white-hairy leaves. Originally a European species, it is now widely distributed in the USA. Although this weed was first collected in the 1950's from a population in Flathead Co., this population does not seem to have become a problem. The plant was introduced into Montana a second time in Carbon Co. Here, between Belfry and Red Lodge on Route 308 Scotch thistle has become an extremely bad pest in pastures and on roadsides. Considering the exponential rate of spread of this weed in the Pacific NW in recent years, it seems certain that weed control measures should be seriously considered without delay.



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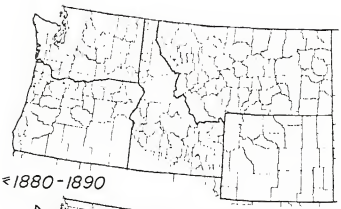
SCOTCH THISTLE



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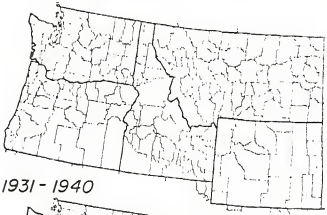

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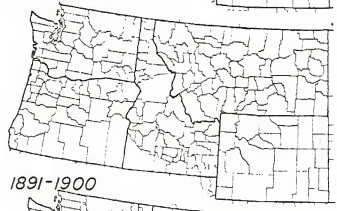

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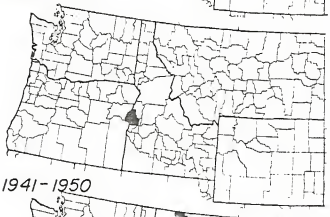
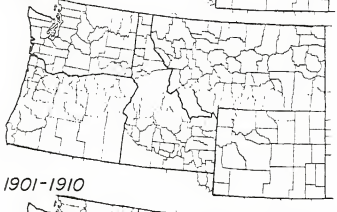


1941-1950



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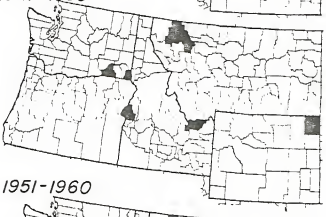
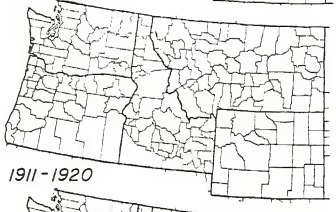


1951-1960



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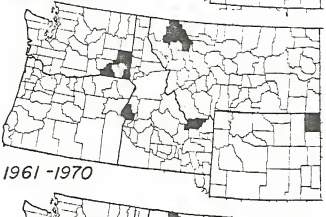

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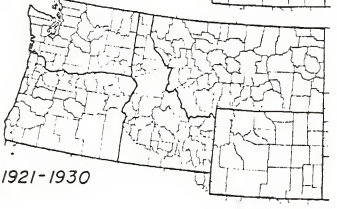
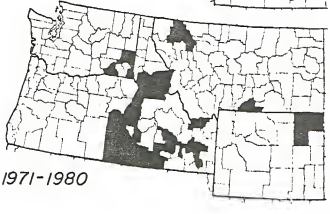


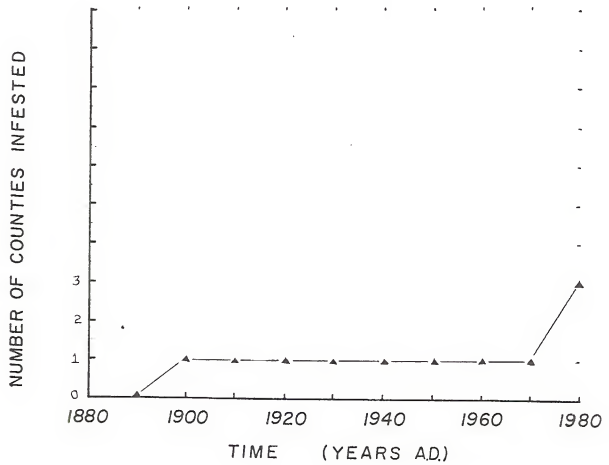
1921-1930



1971-1980

Diplotaxis muralis (L.)DC Stinking wallrocket (Brassicaceae; Cruciferae; Mustard Family)

Stinking wallrocket is a weedy mustard of waste areas. More common in the Atlantic than Pacific states we have recently found it in two Montana counties. In Gallatin County, on a railroad embankment on the eastern edge of Bozeman; and in Cascade County about 8 km (5 miles) NW of the town of Cascade on the roadside of the frontage road to Route 15. It seems doubtful that this will become an important weed in the near future.



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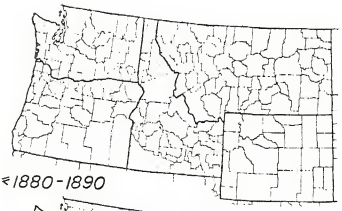
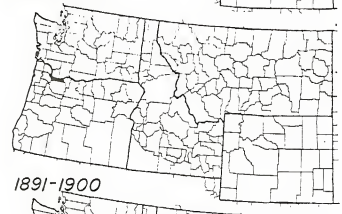
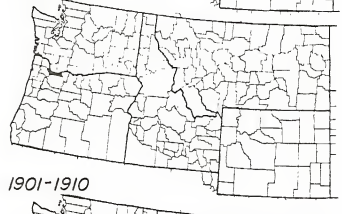
STINKING WALLROCKET



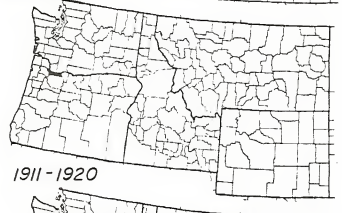
≤1880-1890



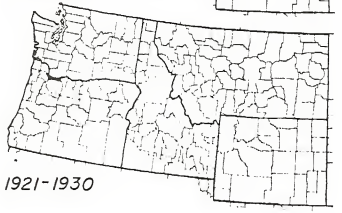
1891-1900



1901-1910



1911-1920



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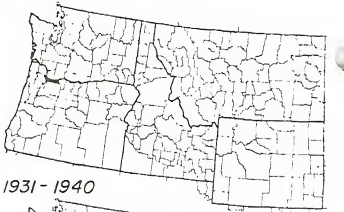
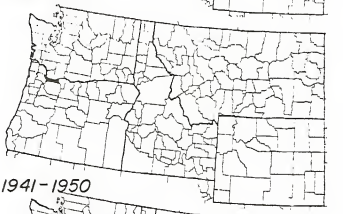
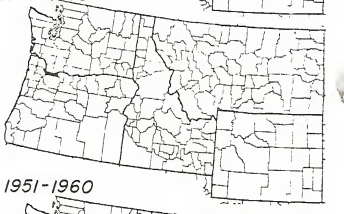


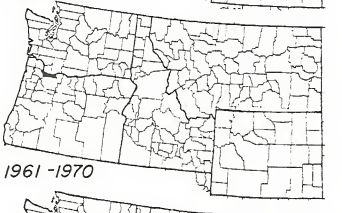
1931-1940



1941-1950



1951-1960



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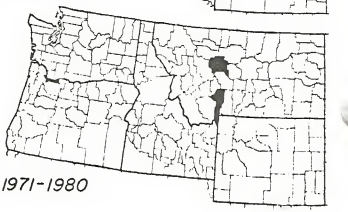
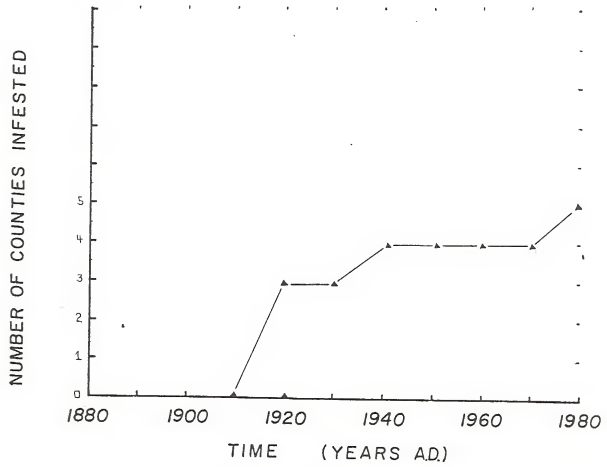


1971-1980

Lobularia maritima (L.) Desv. Sweet alyssum (Brassicaceae; Cruciferae; Mustard Family)

A Southeast Asian species, sweet alyssum weed collections result from its ability to escape cultivation. The plant has not spread in other areas and is probably not likely to do so in Montana. It was found on waste in Bozeman, Gallatin County, Montana.



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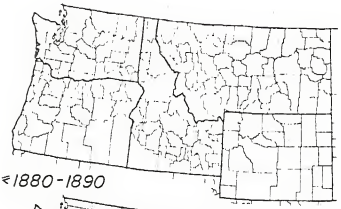
SWEET ALYSSUM



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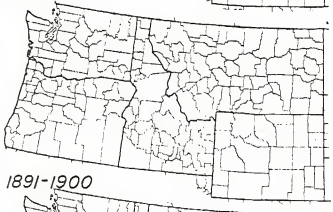

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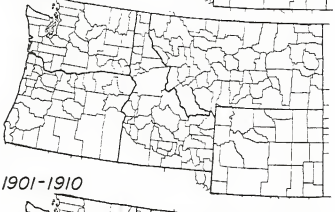

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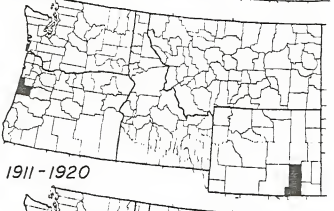
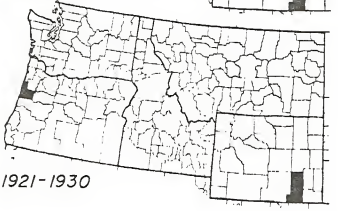


1911-1920



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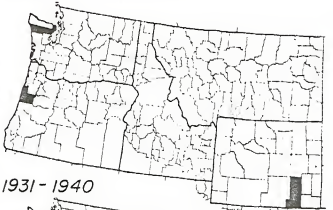

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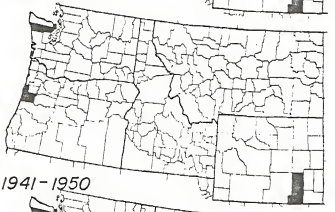
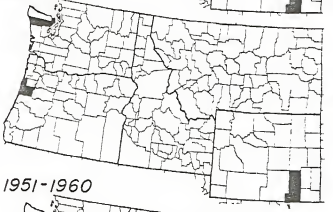


1941-1950



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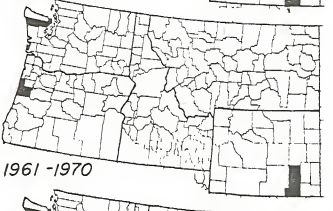

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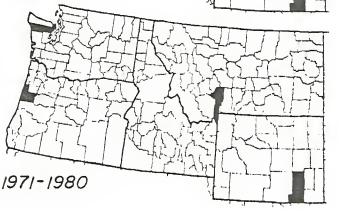
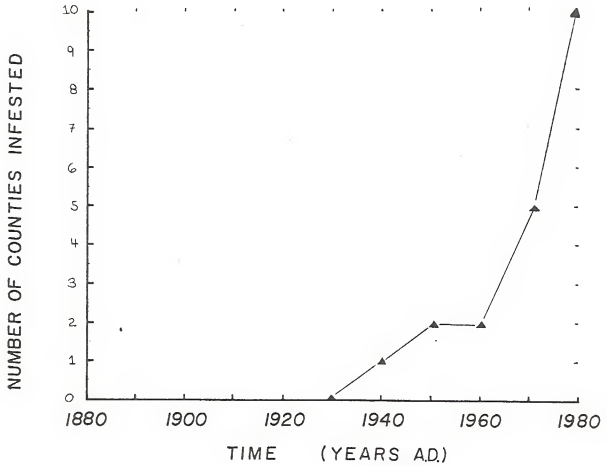


1971-1980

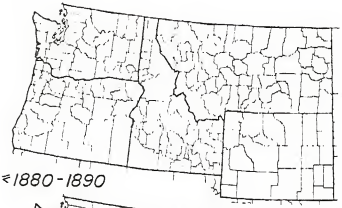
Malcolmia africana R. Br. African malcolmia (Brassicaceae; Cruciferae, Mustard Family)

African malcolmia, a native mustard of northern Africa, is an arid-region weed of disturbed rangeland and roadsides etc. Though more common in the Great Basin area, it is spreading rapidly northward. Judging by its migration rate as shown in the following figure and maps, malcolmia is a weed that should be watched closely in the future. In Montana, malcolmia has been found at Bannock, Beaverhead County, at Silvertip Creek (T 9 S, R 23 E, Section 18), Carbon County, and near Helena, Lewis and Clark County.

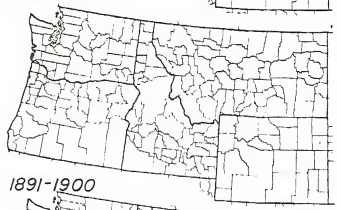


Spread of weed in the Pacific Northwest (Idaho, Montana, Oregon, Washington and Wyoming) by counties. Distributions determined from an analysis of regional herbaria specimens and fieldwork in 1980.

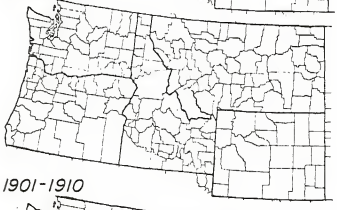
AFRICAN MALCOLMIA



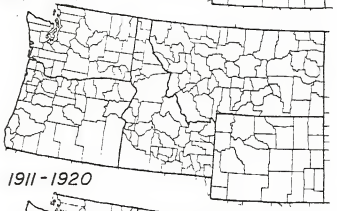
≤1880-1890



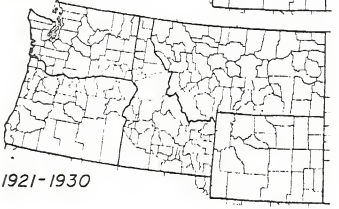
1891-1900



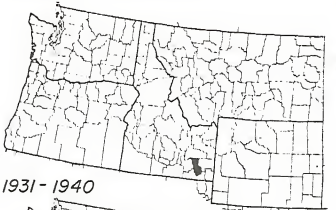
1901-1910



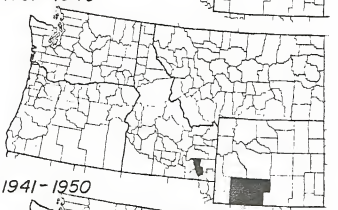
1911-1920



1921-1930



1931-1940



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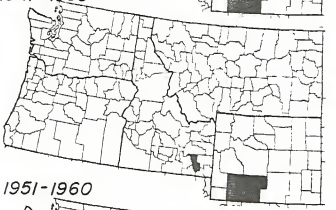
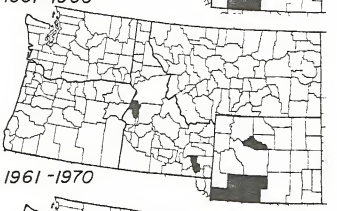
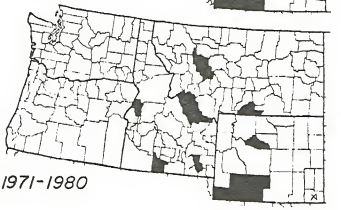


1951-1960



1961-1970

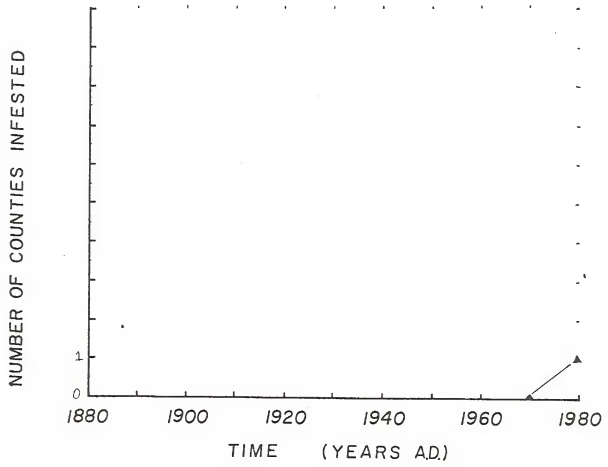


1971-1980

Astragalus falcatus Lam. Russian sickle milk-vetch (Fabaceae; Leguminosae; Legume Family)

Russian sickle milk-vetch is an introduced plant from the Caucasus Mountain region of Eurasia. In the USA it escapes from cultivation. It's properties as a weed are unknown. It is known from Montana only by a single population near a roadside picnic area (the "M") on the flanks of the Bridger Mts., Gallatin County.

This milk-vetch's rate of spread in the Pacific NW suggests that it will not become an important weed, at least not in the near future.



Spread of weed in the Pacific Northwest (Idaho, Montana, Oregon, Washington and Wyoming) by counties. Distributions determined from an analysis of regional herbaria specimens and fieldwork in 1980.

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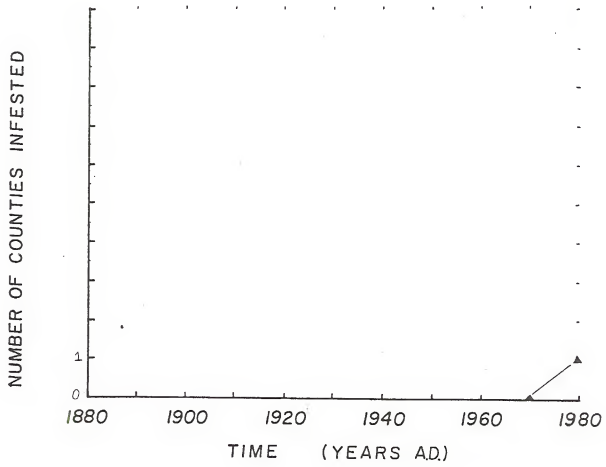
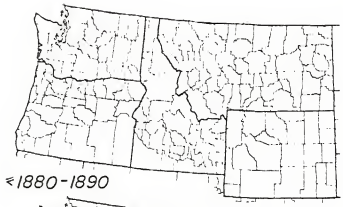
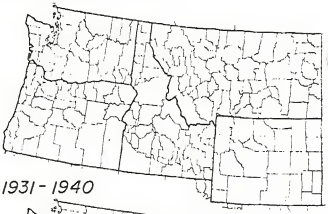


Spread of weed in the Pacific Northwest (Idaho, Montana, Oregon, Washington and Wyoming) by counties. Distributions determined from an analysis of regional herbaria specimens and fieldwork in 1980.

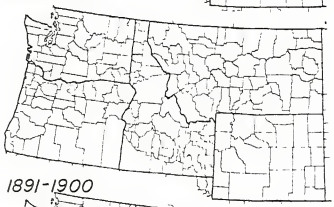
RUSSIAN SICKLE MILK-VETCH



≤1880-1890



1931-1940



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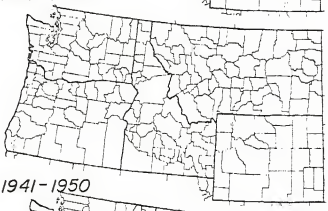
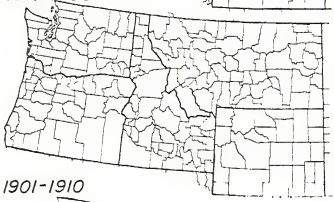


1941-1950



1901-1910

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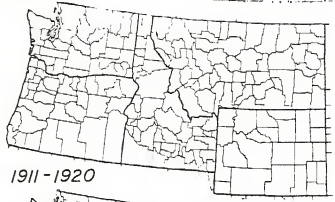

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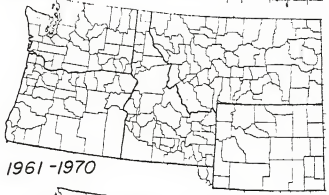

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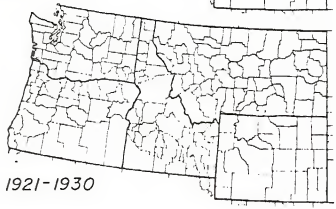
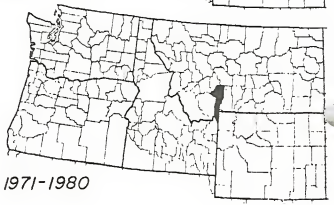


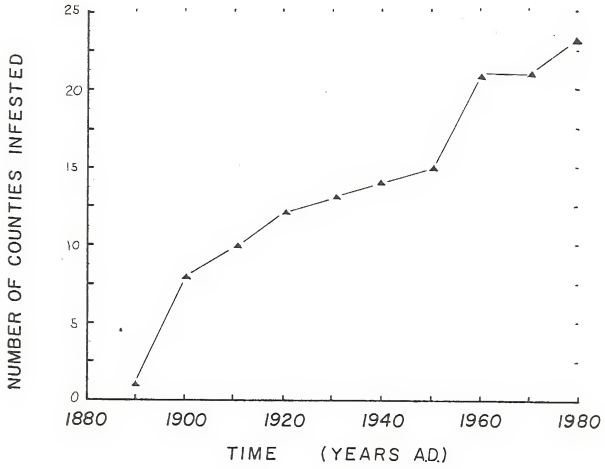
1921-1930



1971-1980

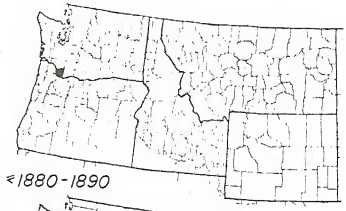
Vicia sativa L. Common vetch (Fabaceae; Leguminosae; Legume Family)

Common vetch is another European plant cultivated in the USA that escapes frequently. It is a rather widespread weed now, though it may not be an especially serious one. Common vetch has spread steadily through the Pacific NW from the coast inland. In Montana, it has been found in Ravalli county along railroad embankments between Hamilton and Florence (adjacent to Route 93).

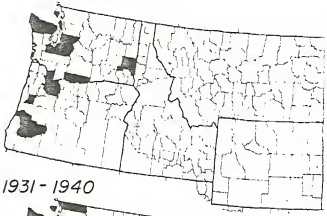


Spread of weed in the Pacific Northwest (Idaho, Montana, Oregon, Washington and Wyoming) by counties. Distributions determined from an analysis of regional herbaria specimens and fieldwork in 1980.

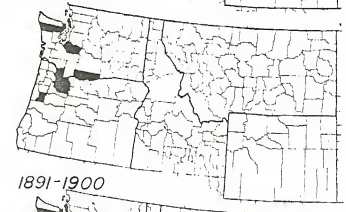
COMMON VETCH



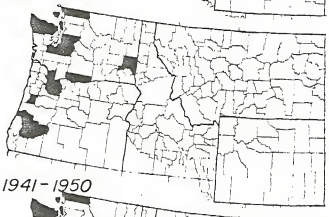
≤1880-1890



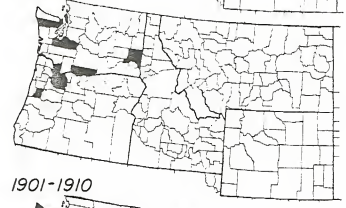
1931-1940



1891-1900



1941-1950



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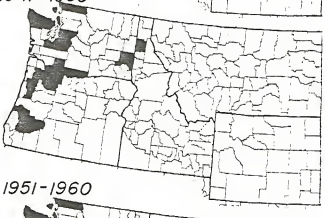
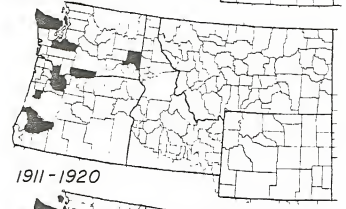
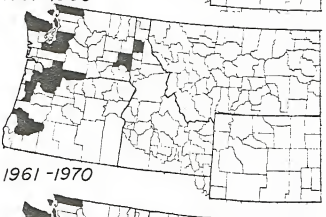


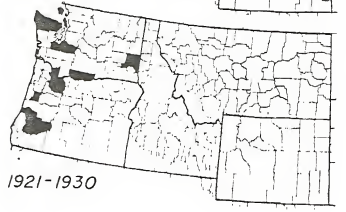
1951-1960



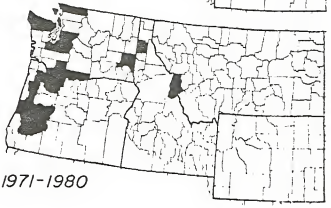
1911-1920



1961-1970



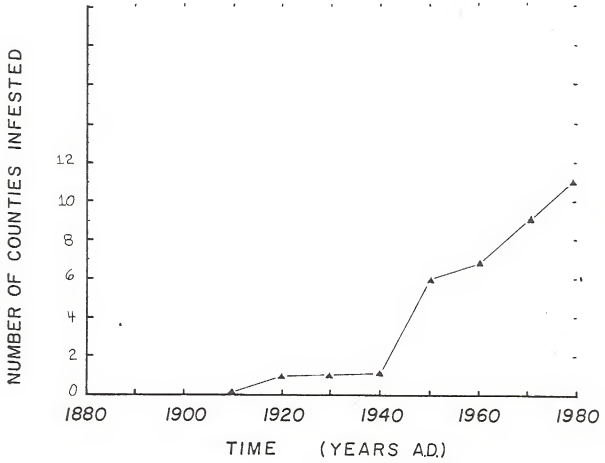
1921-1930



1971-1980

Vicia tetrasperma L. Fourseed vetch (Fabaceae; Leguminosae; Legume Family)

Fourseed vetch, a cultivated European species, escapes cultivation and behaves as a weed in the Pacific NW states. Once established in this capacity it apparently spreads, and it has been doing at a noticeable rate since the 1940's. In Montana, fourseed vetch has been found on railroad embankments parallel to Route 93 between Hamilton and Florence in Ravilli County. Its recent rate of spread suggests that it may pose some problems in the future.



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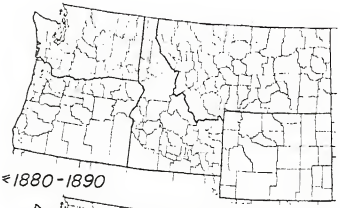
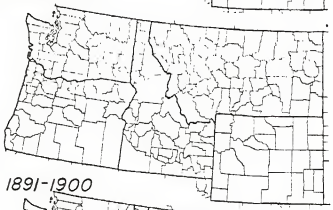
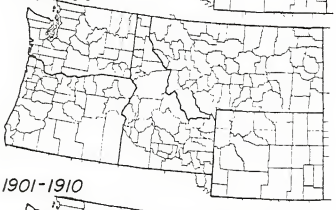
FOURSEED VETCH



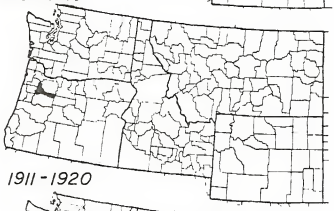
≤1880-1890



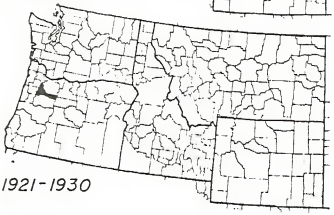
1891-1900



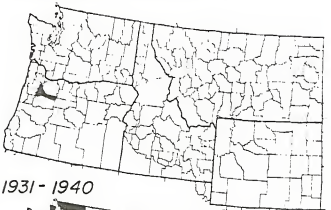
1901-1910



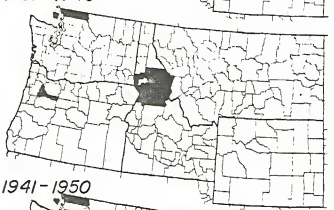
1911-1920



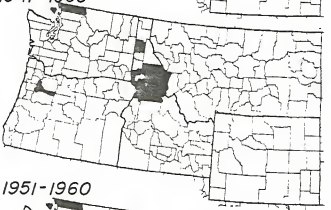
1921-1930



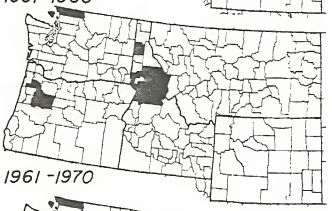
1931-1940



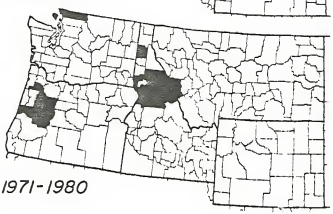
1941-1950



1951-1960



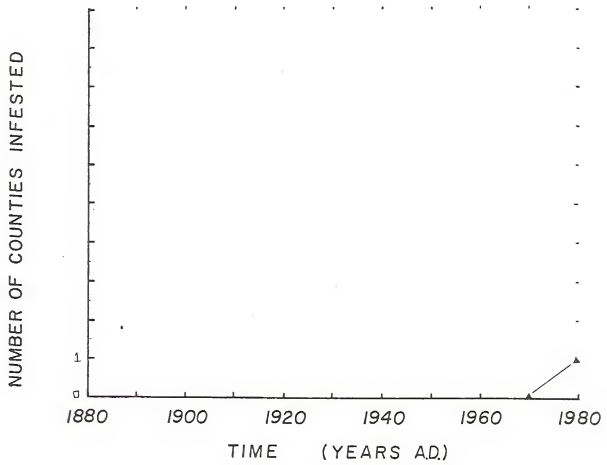
1961-1970



1971-1980

Phacelia thermalis Greene Hot-spring phacelia (Hydrophyllaceae; Waterleaf Family)

Hot-spring phacelia is a weedy herb native to the clay deserts of the Great Basin area. The Montana collection of this species about the Fort Peck Reservoir in Phillips County probably represents recent introduction. It is unlikely that hot-spring phacelia will be a serious weed.



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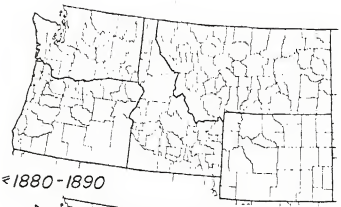
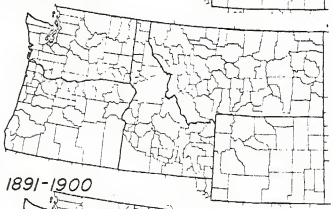
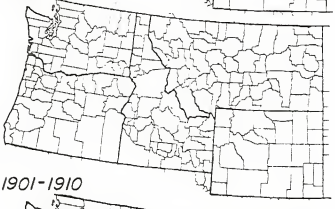
HOT-SPRING PHACELIA



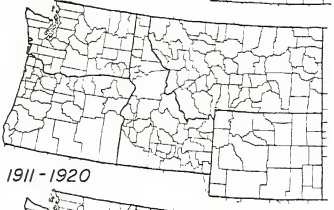
≤1880-1890



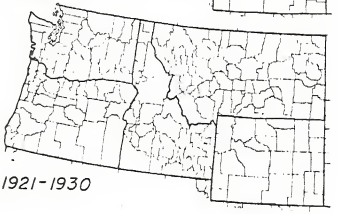
1891-1900



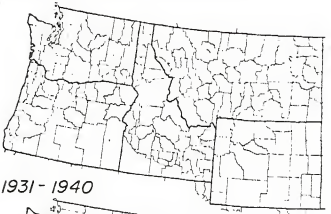
1901-1910



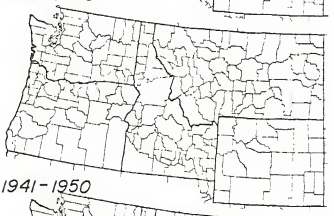
1911-1920



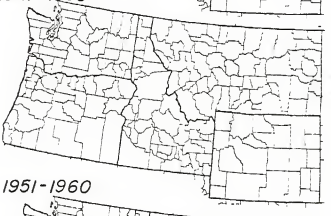
1921-1930



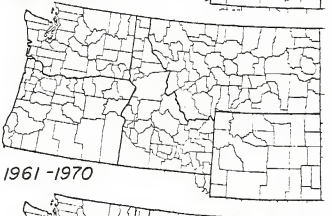
1931-1940



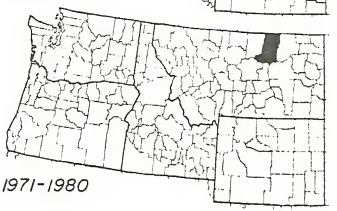
1941-1950



1951-1960



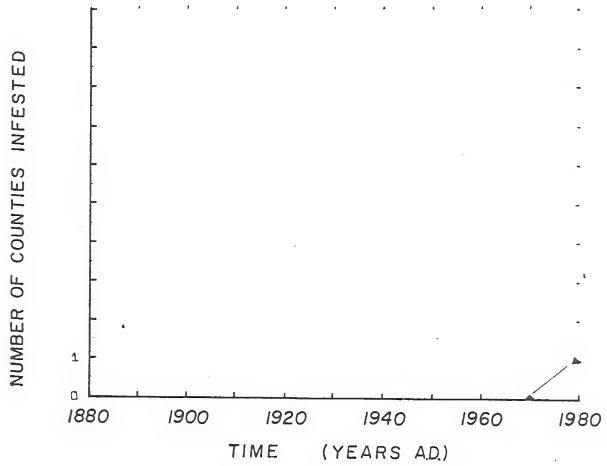
1961-1970



1971-1980

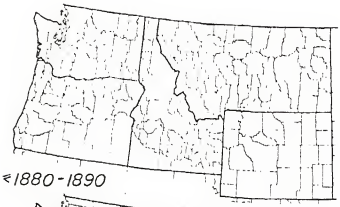
Hemerocallis fulva L. Tawny lily (Liliaceae; Lily Family)

Though this showy European lily is known as an escaped ornamental in the eastern USA, it has not been previously recorded for the Northwestern states. The Montana collections come from moist roadsides of Route 93 and its frontage road just south of Hamilton, Ravalli County. It is unlikely to become an important weed.

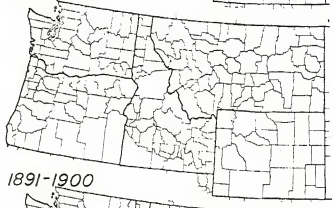


Spread of weed in the Pacific Northwest (Idaho, Montana, Oregon, Washington and Wyoming) by counties. Distributions determined from an analysis of regional herbaria specimens and fieldwork in 1980.

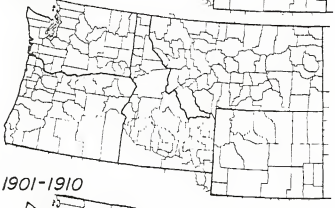
TAWNY LILY



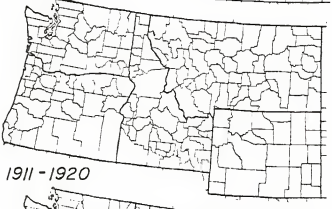
≤1880-1890



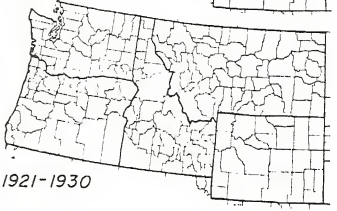
1891-1900



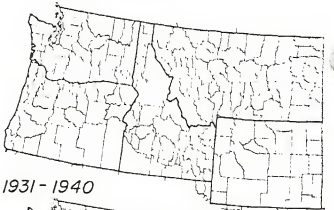
1901-1910



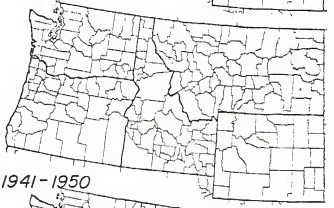
1911-1920



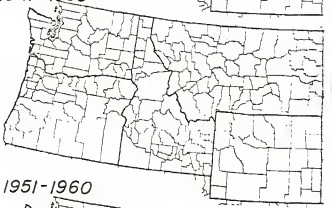
1921-1930



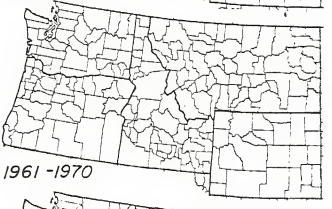
1931-1940



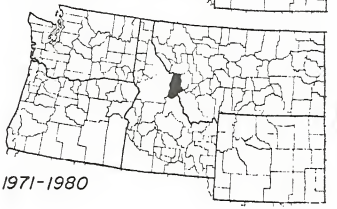
1941-1950



1951-1960



1961-1970

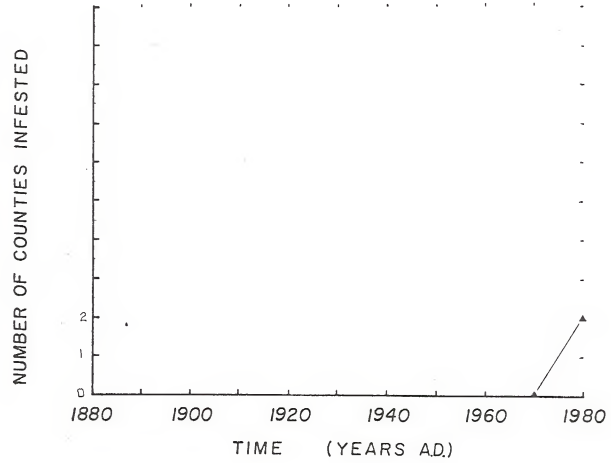


1971-1980

Heleochloa (= Crypsis) alopecuroides (Pill. S. Mitterp.) Host. Foxtail swamp timothy (Poaceae; Gramineae; Grass Family)

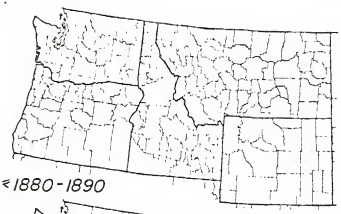
Foxtail swamp timothy is a small annual Mediterranean grass of sandy soil, usually proximal to water. Though data from non-Montana herbaria has not been collected for this recently introduced species, it apparently has been rapidly spreading eastward along the Columbia River from Portland. By 1976 it had reached Power County, Idaho. This weedy grass was also introduced in to Philadelphia, Pennsylvania, and has spread westward to Illinois. The two Montana collections both come from the banks of the Yellowstone River; one at Hysham (Treasure County), the other at Glendive (Dawson County). It is possible that this grass could become a problem-weed of irrigation ditches.

The following graph and maps represent the spread of foxtail swamp timothy only in Montana. Data for other states in the Pacific NW will be included in subsequent reports to the Dept. of Agriculture.

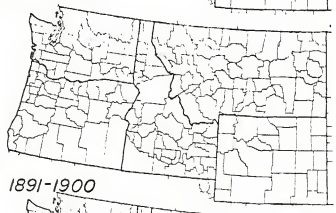


Spread of weed in the Pacific Northwest (Idaho, Montana, Oregon, Washington and Wyoming) by counties. Distributions determined from an analysis of regional herbaria specimens and fieldwork in 1980.

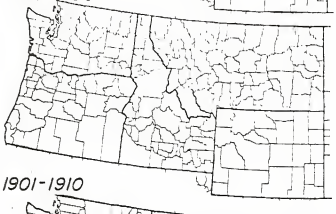
FOXTAIL SWAMP TIMOTHY



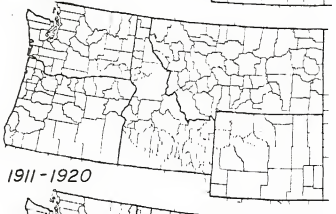
≤1880-1890



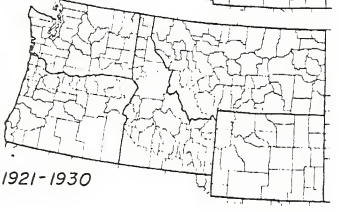
1891-1900



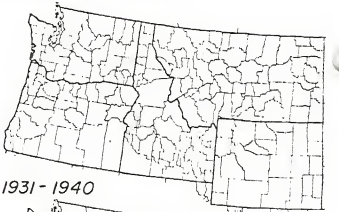
1901-1910



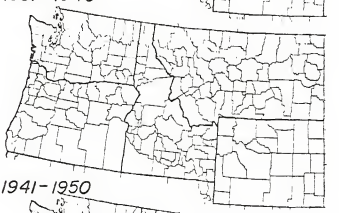
1911-1920



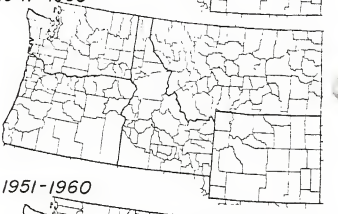
1921-1930



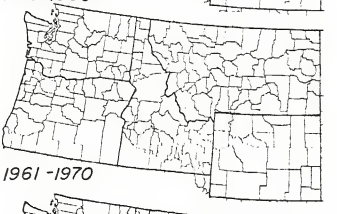
1931-1940



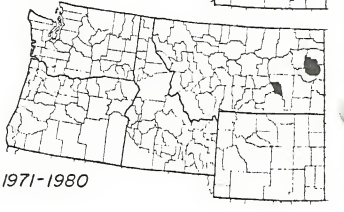
1941-1950



1951-1960



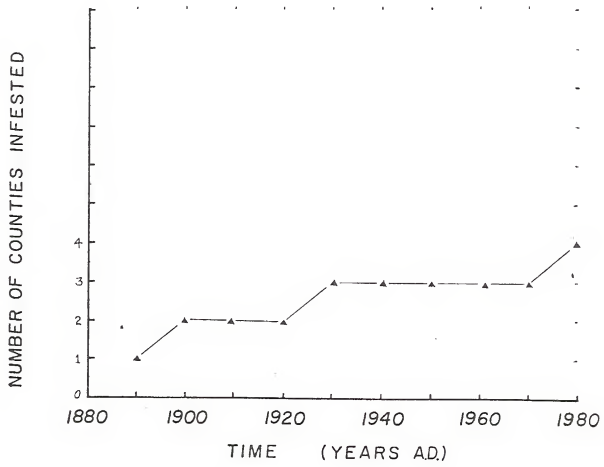
1961-1970



1971-1980

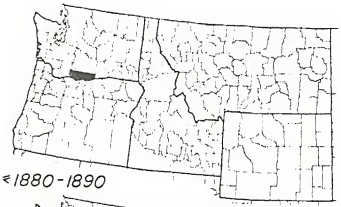
Setaria italica (L.) Beauv. Foxtail Millet (Poaceae; Gramineae; Grass Family)

Foxtail millet is a common weedy annual grass of the eastern USA, where it was originally introduced from Europe. In the northwestern states it is exceedingly rare, and apparently even once it becomes established (as in Multnomah County, OR and Klickitat County WA) it does not spread. In Montana, it was sparingly found as a roadside and railroad embankment weed along Route 87 in Chouteau County. In view of the data presented below, it seems highly unlikely that foxtail millet will become a troublesome pest.

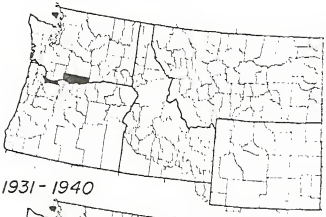


Spread of weed in the Pacific Northwest (Idaho, Montana, Oregon, Washington and Wyoming) by counties. Distributions determined from an analysis of regional herbaria specimens and fieldwork in 1980.

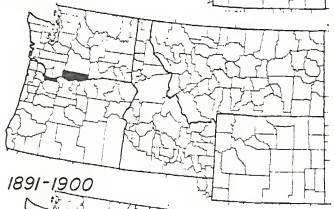
FOXTAIL MILLET



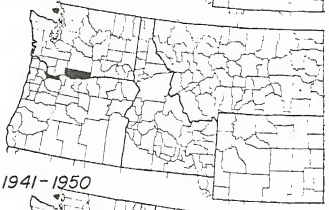
≤1880-1890



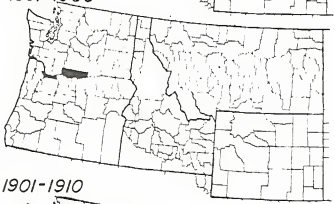
1931-1940



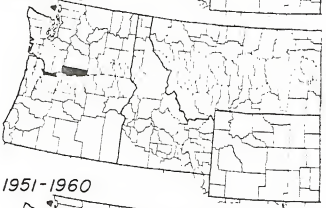
1891-1900



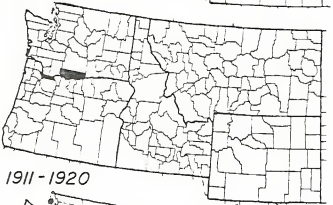
1941-1950



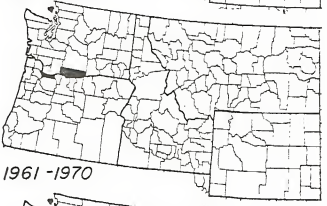
1901-1910



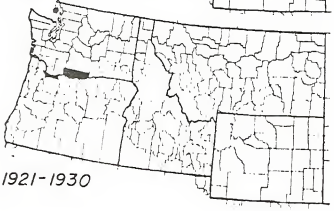
1951-1960



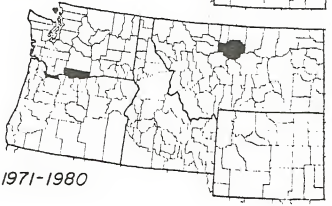
1911-1920



1961-1970



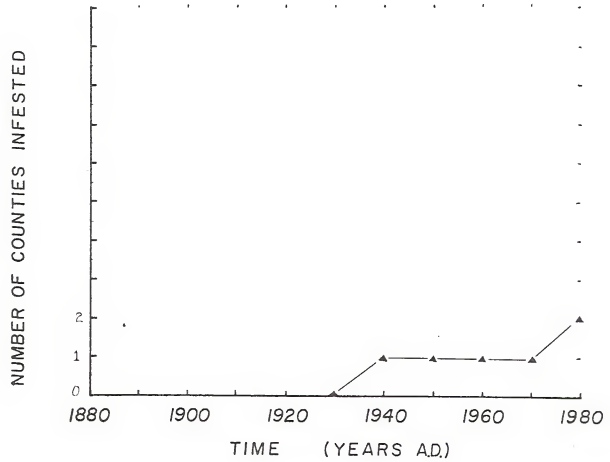
1921-1930



1971-1980

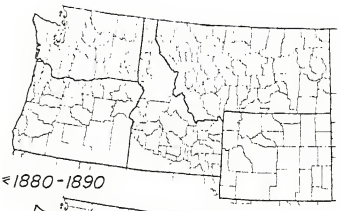
Sorghum halepense (L.) Pers. Johnsongrass (Poaceae; Gramineae; Grass Family)

The perennial, rhizomatous, johnsongrass, another Mediterrean introduction, has been planted for hay and forage in the eastern and southern USA, but it is now usually considered an extremely abundant and troublesome weed in these same areas. Young shoots are toxic to livestock. The grass is quite rare in the Pacific NW where it has been sporadically collected on the mesic western margin of the region (not shown on maps below). It is believed not to have become permanently established in those areas. Spreading westward from the Great Plains, the plant has entered Wyoming (Johnson County), and we have located a perennial reproducing colony on railroad ballast parallel to Route 310 in Carbon County just south of the Yellowstone County line. Though it is doubtful that johnsongrass will become a major weed in Montana, given its noxious reputation in states farther south and east, populations of johnsongrass in Montana should be closely watched.

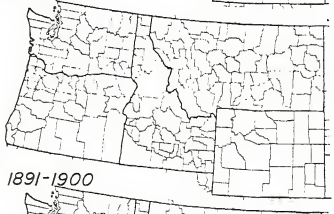


Spread of weed in the Pacific Northwest (Idaho, Montana, Oregon, Washington and Wyoming) by counties. Distributions determined from an analysis of regional herbaria specimens and fieldwork in 1980.

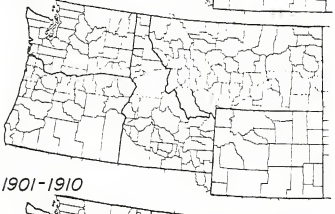
JOHNSONGRASS



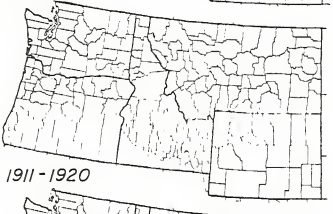
≤1880-1890



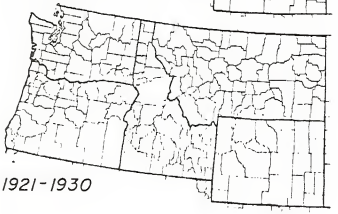
1891-1900



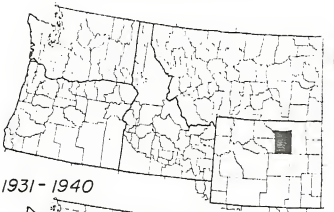
1901-1910



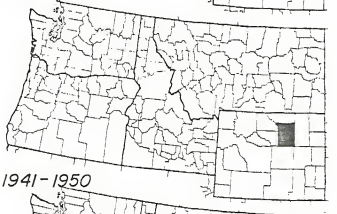
1911-1920



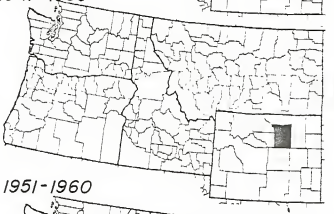
1921-1930



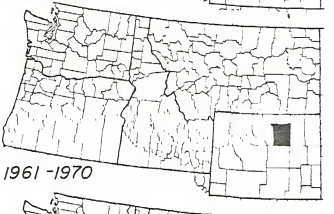
1931-1940



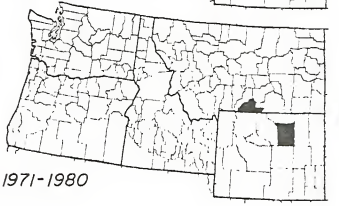
1941-1950



1951-1960



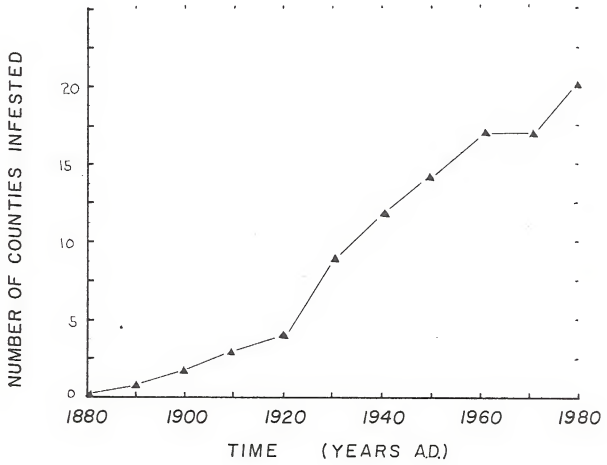
1961-1970



1971-1980

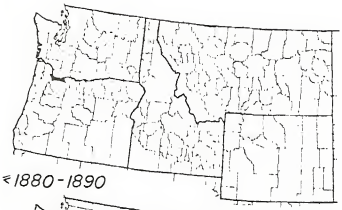
Polygonum hydropiper L. Marshpepper smartweed (Polygonaceae; Smartweed Family)

Marshpepper smartweed, not uncommon in the USA and steadily increasing in the northwestern states, is an originally European weed that infests swamps, irrigation ditches, stock ponds etc. We located an extensive population of this hydric weed in an ephemeral stockpond along an unnumbered dirt road approximately 26 km (16 mi) due east of Fort Benton in Chouteau County. Another, much smaller population was located in an irrigation outlet to a sugar beet field on Route 72 about 8 km (5 miles) northeast of Belfry, Carbon County. The linear increase in the number of counties occupied by marshpepper smartweed, as shown in the following graph, indicates that populations of this weed will not rapidly expand in the near future.

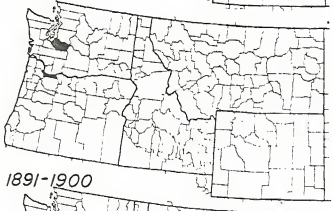


Spread of weed in the Pacific Northwest (Idaho, Montana, Oregon, Washington and Wyoming) by counties. Distributions determined from an analysis of regional herbaria specimens and fieldwork in 1980.

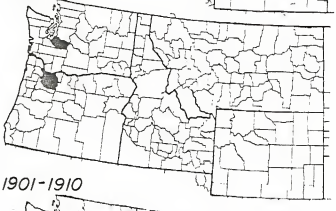
MARSHPEPPER SMARTWEED



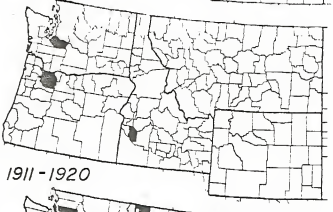
≤1880-1890



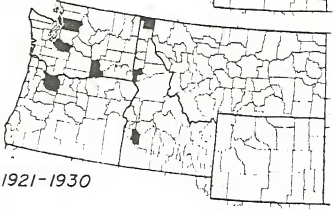
1891-1900



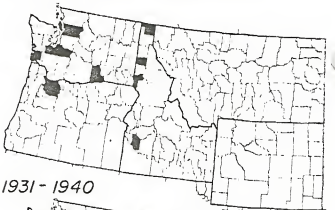
1901-1910



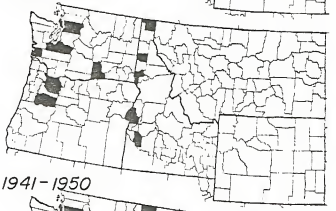
1911-1920



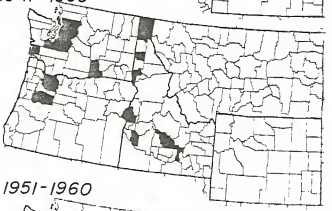
1921-1930



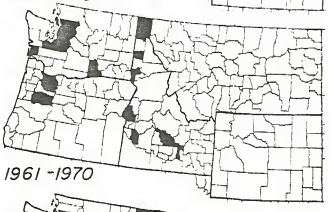
1931-1940



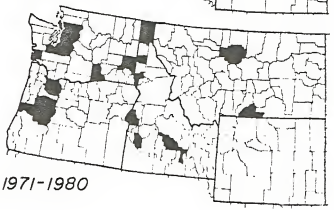
1941-1950



1951-1960



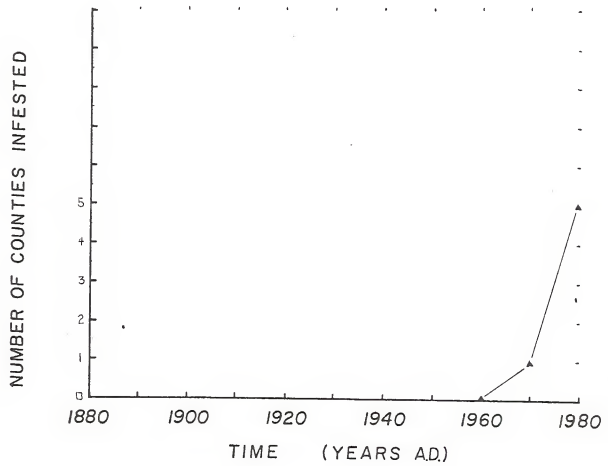
1961-1970



1971-1980

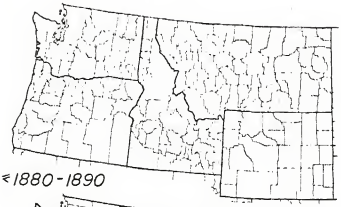
Veronica anagalis-aquatica L. Water Speedwell (Scrophulariaceae; Figwort Family)

Water speedwell is a herb characteristic of irrigation ditches, streamsides and shallow wet depressions. A native of Europe, it is rare, but spreading in the northwestern United States. The spread of this species is documented in the following graph and maps where data from only Montana herbaria is used. Water speedwell has been collected from Dawson, Garfield, Missoula, Ravalli and Sanders Counties.

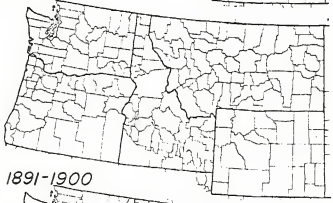


Spread of weed in the Pacific Northwest (Idaho, Montana, Oregon, Washington and Wyoming) by counties. Distributions determined from an analysis of regional herbaria specimens and fieldwork in 1980.

WATER SPEEDWELL



≤1880-1890



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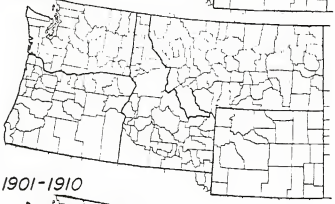

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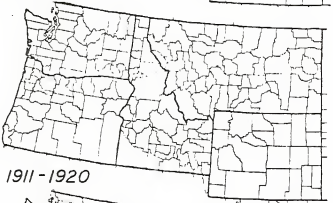
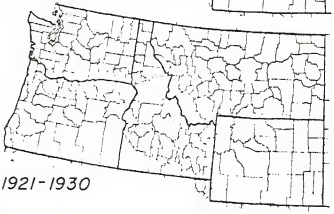
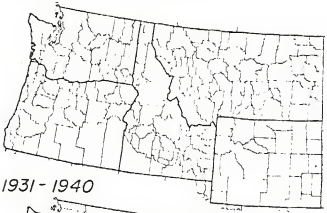


1911-1920



1921-1930



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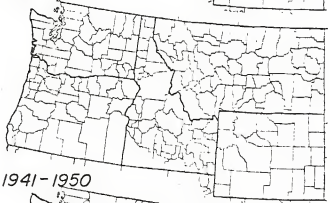

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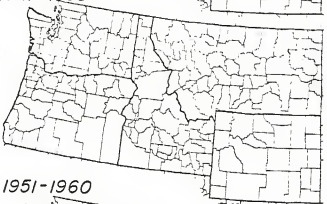
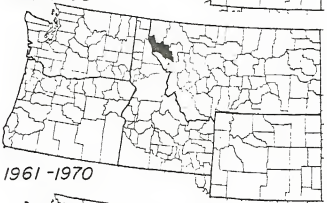
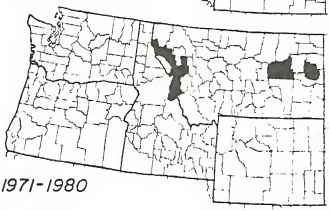


1951-1960



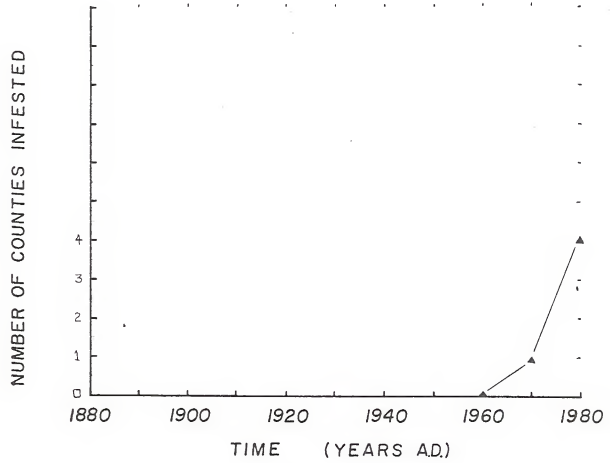
1961-1970



1971-1980

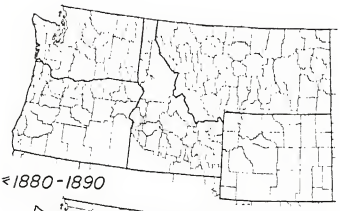
Veronica biloba L. Bilobed Speedwell (Scrophulariaceae; Figwort Family)

Another small European native herb of wastel, bilobed speedwell has colonized four Montana counties (Beaverhead, Carbon, Gallatin and Madison Counties). Though this speedwell seems to be spreading with some rapidity, its diminuitive size makes it unlikely to become an economically significant weed. The following graph and maps consider only data from Montana herbaria.

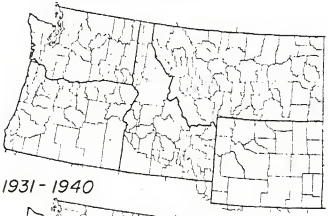


Spread of weed in the Pacific Northwest (Idaho, Montana, Oregon, Washington and Wyoming) by counties. Distributions determined from an analysis of regional herbaria specimens and fieldwork in 1980.

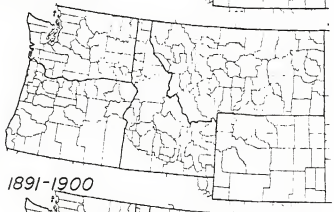
BILOBED SPEEDWELL



≤1880-1890



1931-1940



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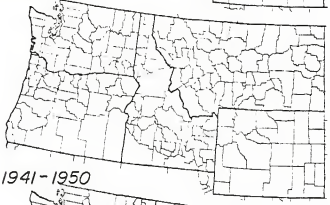
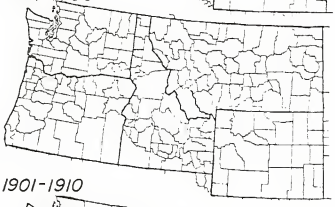
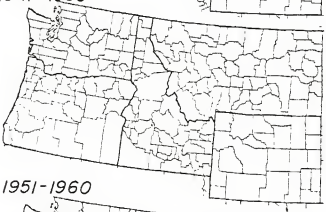


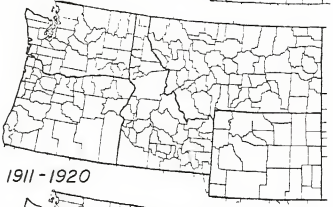
1941-1950



1901-1910



1951-1960



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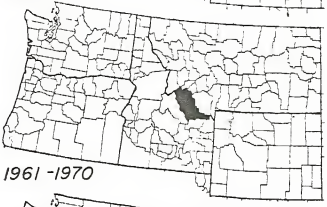
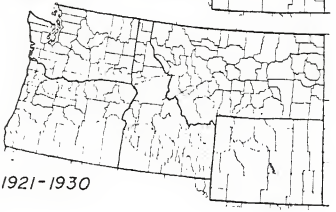


1961-1970



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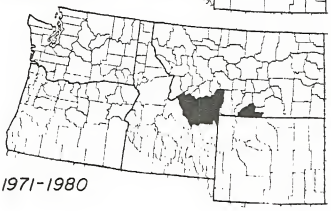
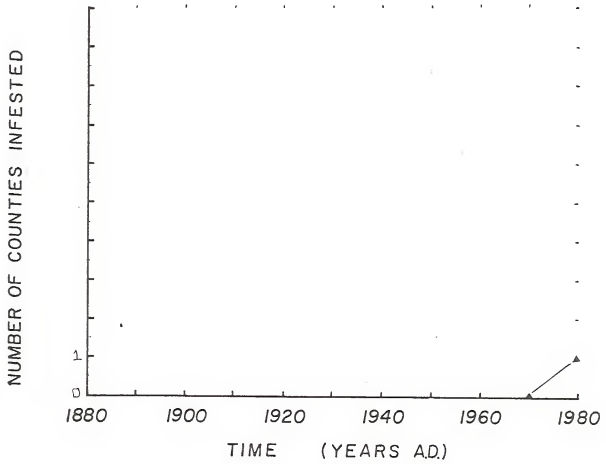


1971-1980

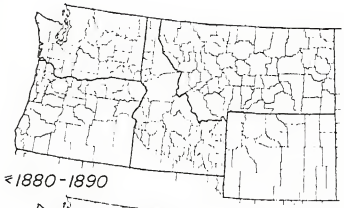
Veronica longifolia L. Long-leaved Speedwell (Scrophulariaceae; Figwort Family)

Long-leaved speedwell is a small European weed of disturbed soil. It has occassionally been collected in the Pacific coast states. In Montana, it has been found in Flathead County. Long-leaved speedwell is unlikely to become a significant weed. The following graph represents data from Montana herbaria only.

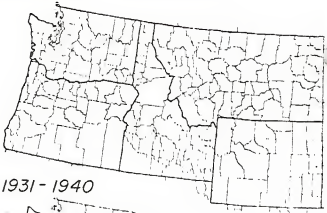


Spread of weed in the Pacific Northwest (Idaho, Montana, Oregon, Washington and Wyoming) by counties. Distributions determined from an analysis of regional herbaria specimens and fieldwork in 1980.

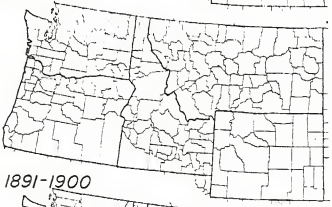
LONG-LEAVED SPEEDWELL



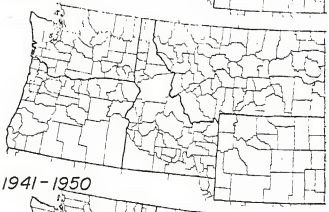
≤1880-1890



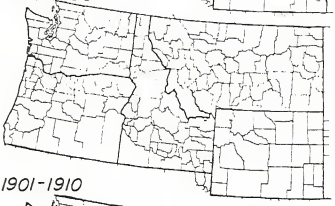
1931-1940



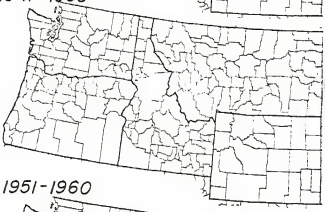
1891-1900



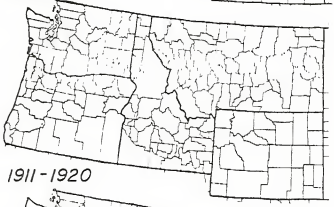
1941-1950



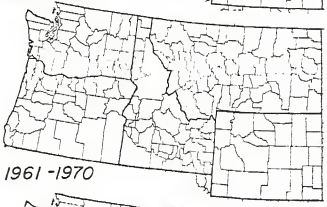
1901-1910



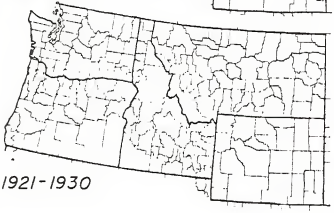
1951-1960



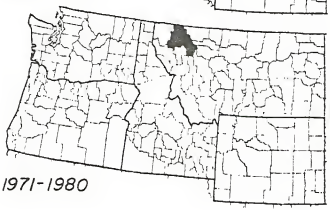
1911-1920



1961-1970



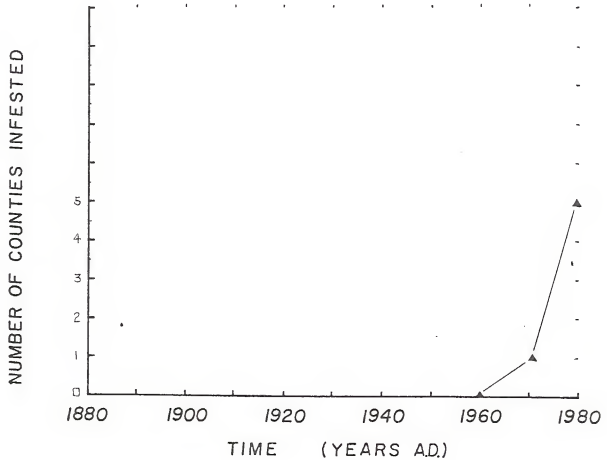
1921-1930



1971-1980

Tamarix chinensis Lour. Chinese Tamarisk or Saltcedar (Tamaricaceae; Tamarisk Family)

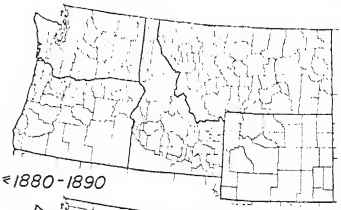
Saltcedar (several similar species) is an Asian introduction. This small tree or shrub is characteristic of warm arid regions where it grows along steamsides or in gullies. In the southwestern United States it is considered a serious weed along irrigation ditches. Its spread in Montana may give some reason for alarm. Though the Montana climate superficially seems too cold for saltcedar to become abundant, its populations should be carefully monitored. The following graphs include data only from Montana herbaria. In Montana, saltcedar has been found along the Yellowstone River in Glendive (Dawson County) and Hysham (Treasure County); along the Big Horn River near Hardin (Big Horn County); and in Carbon County (T 8 S, R 28 E, NE ¼ Section 35).



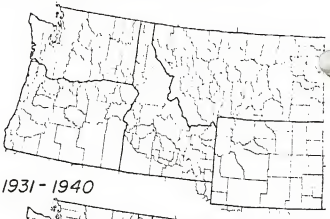
Spread of weed in the Pacific Northwest (Idaho, Montana, Oregon, Washington and Wyoming) by counties. Distributions determined from an analysis of regional herbaria specimens and fieldwork in 1980.

#1/D

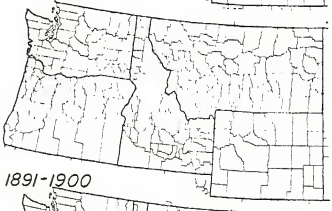
CHINESE TAMARISK OR SALTCEDAR



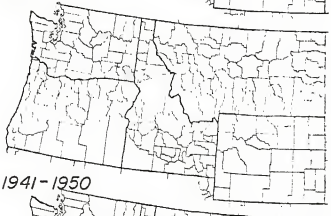
≤1880-1890



1931-1940



1891-1900



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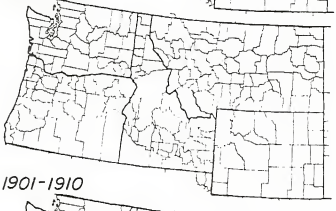

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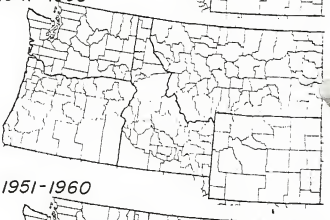
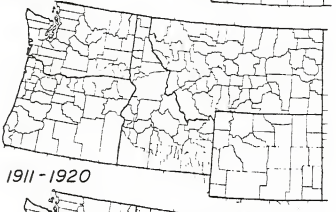


1951-1960



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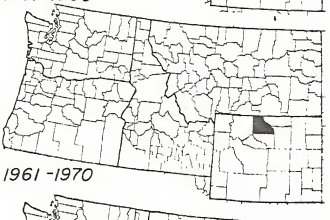

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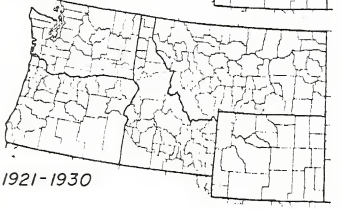

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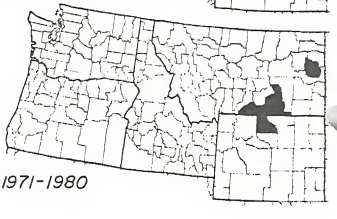

1971-1980

INDEX

(and nomenclatural cross-reference)

#1/D